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A. Features

- Max. up to 4 CH vehicle cameras, can take record for inside and outside the vehicle.
- Video output for live view, playback with monitor.
- H.264 Compression format.
- Recording format : D1 and CIF.
- Built-in single channel microphone.
- Quick Search Overall Event Log.
- The full recording time and date can be showing in the monitor directly.
- Auto-Record after memory card Plug-in and Power Supplied.
- Data Store in SD card for better safety and anti-vibration performance.
- 4 sets of alarm input ports, built-in buzzer.
- Support Record Video with audio, video, G-sensor and GPS data at the same time.
- Optional for 3G module, control the driving status and data at any time.

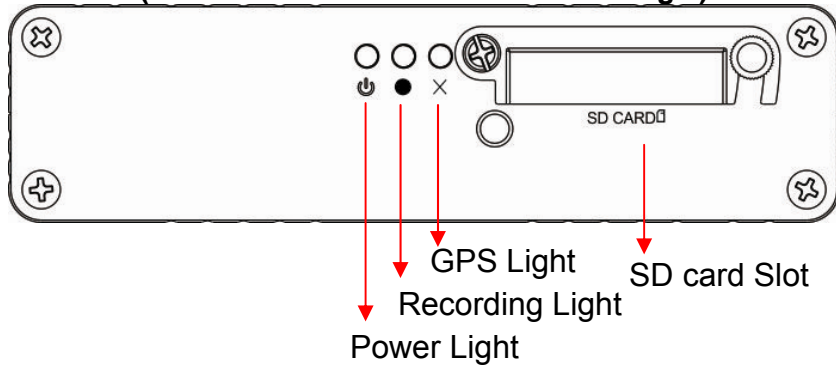
B. Specification

Items		Description	
Video format		NTSC	PAL
Video input		4CH Input	
Audio input		1CH Input	
Video output		1CH output	
Audio output		1CH output	
Alarm input		4 alarm input	
Alarm output		Buzzer	
Display mode		Full Screen, 4 Split	
Record resolution	highest	D1 720 x 480	D1 720 x 576
	normal	CIF 360 x 240	CIF 360 x 288
Recording Frame		Max. 120 FPS	Max. 100 FPS
Compression Format		H.264 Technology	
Operating system		Embedded Linux	
Single-tasking		Record / Playback	
Recording mode		Full-time recording	
LED indicator		Power, recording, GPIO	
Buzzer		Video Loss	
Storage		SD Card	
Back-up system		CarBox Player	
Firmware upgrade		SD Card	
Multi-language		English /Simplified Chinese /Traditional Chinese / Japanese /Spanish / German/ Korean (W/O 3G model)	
G-SENSOR		Yes	
3G-module		Optional (USB 3G dongle or built-in 3G module)	
GPS position		Optional	
Control method		IR remote controller	
Power supply		DC+12V / 500mA (not including Cameras)	
Dimension		115mm x 132.7mm x 30mm (W x D x H)	
Weight		0.4kg (including SD card)	
Operation Temperature		-20℃ ~ +65℃ (inside vehicle)	
Accessories	Standard	Main Machine, 3 Pin Power Cable, Alarm Cable, 3M Extending IR Lead, Remote Control, Microphone, Driver CD, Quick Guide ★.Built-in 3G: Antenna, 1.5M Extension Antenna Cord	
	Optional	3G Module, G-Mouse, SD Card	

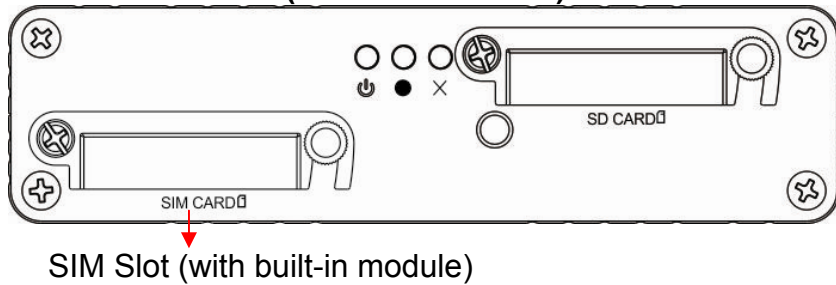
C. Product Appearance

Front

(Without 3G module and 3G USB dongle)

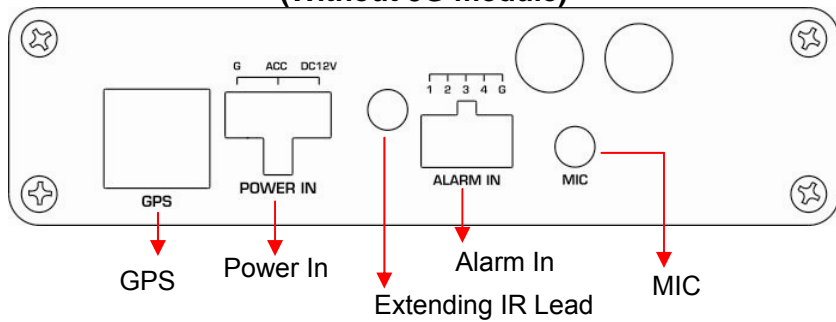


(Built-in 3G module)

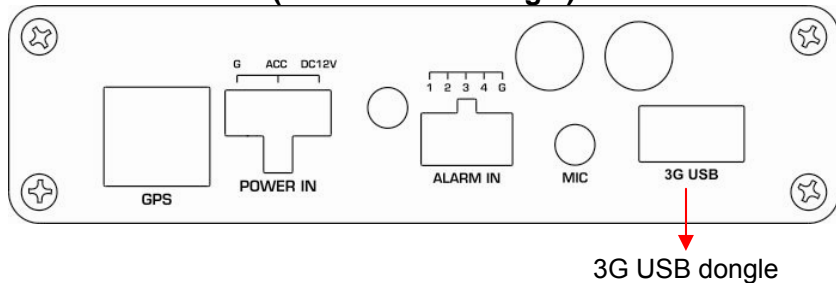


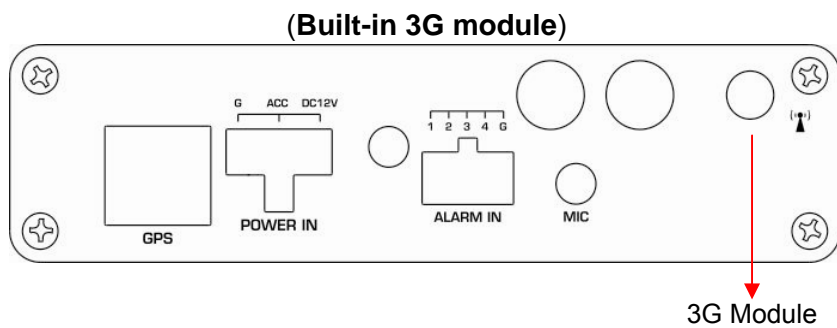
Back

(Without 3G module)



(With 3G USB dongle)





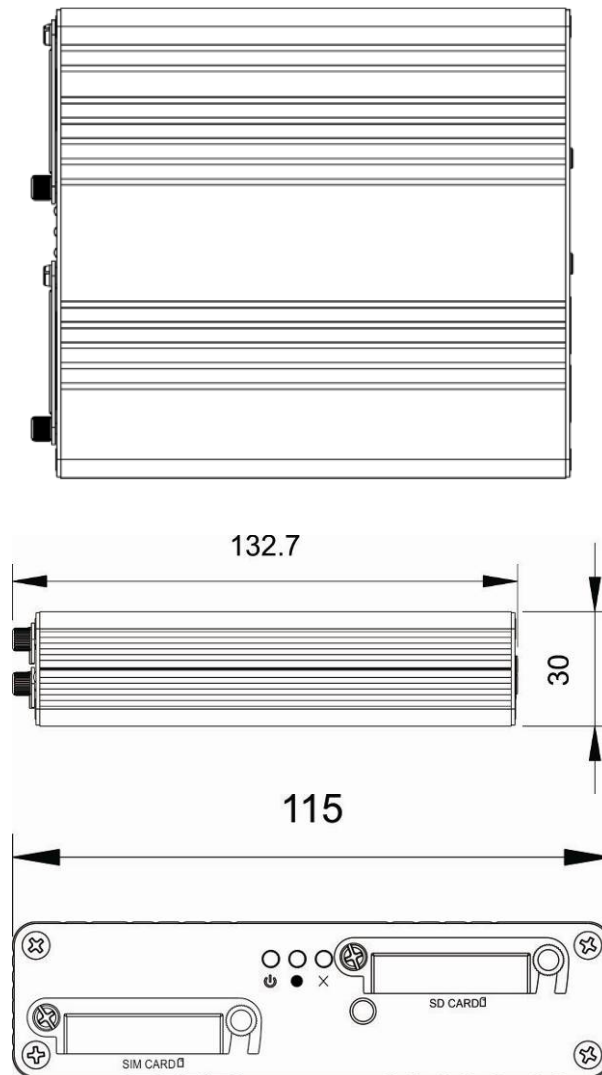
Cable Installing Instruction



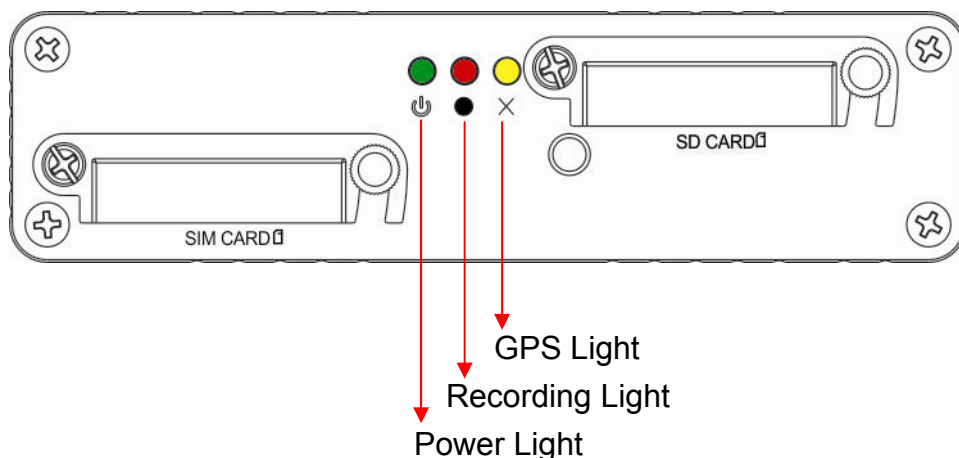
- A: Audio Out
- V: Video Out
- 1: CH 1 Video In
- 2: CH 2 Video In
- 3: CH 3 Video In
- 4: CH 4 Video In

D. Product Dimension

UNIT: mm



E. Record / Stop-Record



1. Power on / Record

Insert SD card into slot and then power on the machine, waiting about 30 seconds after booting completed.

During the DVR booting up, the record indicator will start flashing as the recording is in progress.

- Green light: light on means power on; light off, means power off.
- Yellow light: Light off means GPS not ready, light on means GPS positioning ready.
- Red light: Red Led flashing means DVR is on recording. Red Led off means No-Record. Red Led flashing quickly means playback file.

★Remark: When DVR is on playback mode, the DVR will stop record.

2. Turn off / Stop record

After Power-off, DVR will stop record, you can remove SD card and plug it to PC to review the file.

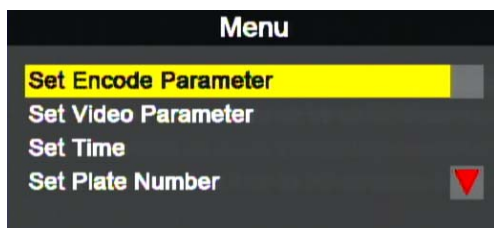
F. System operating instruction

1. Through IR Remote controller instruction

As following is the key mapping table for IR Remote controller :

	Icon	Function
		Ch1 display
		Ch2 display
		Ch3 display
		Ch4 display
		Quad display
		Record
		Mute
		Menu
		Enter
		Up
		Down
		Left
		Right
		Play
		Pause
		Stop

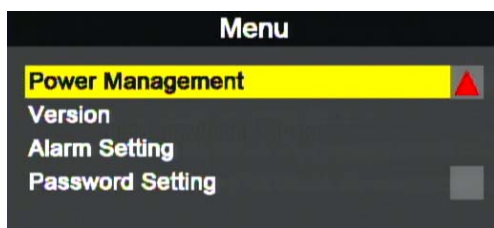
2 Main menu page switch



page1/5 setting



page 2/5 setting



Page 3/5 setting








Page 4/5 setting



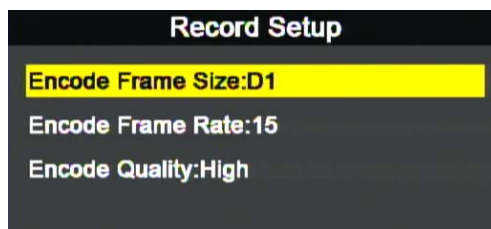
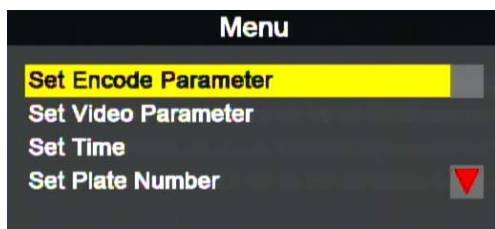
Page 5/5 setting(with 3G Module)

◆ IR Remote controller Instruction

Manu Setting Push the IR  key, enter OSD Manu Setting page °
After entering the OSD Manual Setting Page, Push   key, could change setting for selected item: And push  key to enter each kind of setting page. For leaving each kind of setting page, please push  to leave and come back to the OSD Setting page.

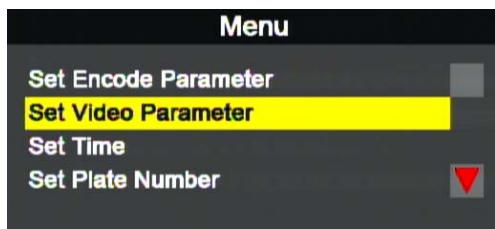
■ System Setup instruction

(1) Set Encode Parameter



- Select key, enter Set Encode Parameter Page.
- Select key, Choose desired Selection you wish to set.
- Select to set each Encode parameter item, after setting then push key to save all the setting.
 - Encode Frame Size : D1, CIF (→CIF)/(→D1).
 - Encode Frame Rate : 5, 10, 15, 20, 25, 30
(→decrease)/(→increase).
 - Encode Quality: Low/Normal/High
(→Normal), (→Hight).
 - D1 max. 15 / CIF max. 30.

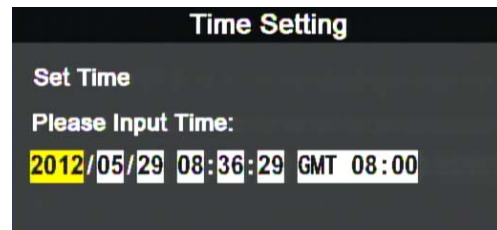
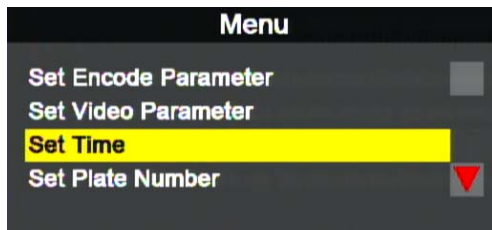
(2) Set Video Parameter









IR remote controller operating instruction

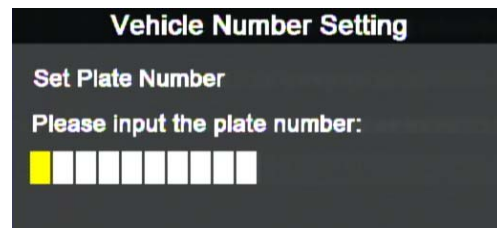
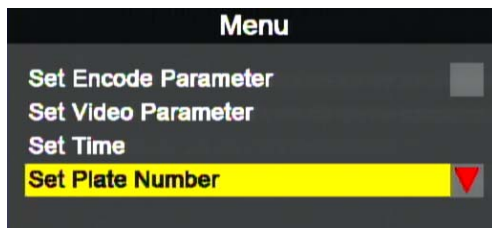
- Up/Down key→ Select current channel for setup
- Left/Right key→ Set brightness/contrast/hue for current
- channel (Left key→ To reduce)/ (Right key→ To increase)







(3) Set Time



- Click  to enter Time Setting page
- Using the   button to move column (Year, Month, Date, Hour, Minute, Second and Time Zone..
- Using the   to change the volume of column.
- Click the  to confirm and save the changing.
 - ★ If GPS is available, the time will be calibrated automatically according to time zone.





(4) Set Plate Number



- Click  to enter Vehicle Number Setting
- Using   button to move to different columns.
- Using   button to change the volume
- After setting, click  to confirm/Save the changing.
 - ★ Available characters: A~Z, 0~9

(5) Delete All Record Data (Disk Format)







- Click  to enter Delete All Record Data (Disk Format).
- Using   button to move to different selections (No or Yes), and Click  to confirm and execute it.

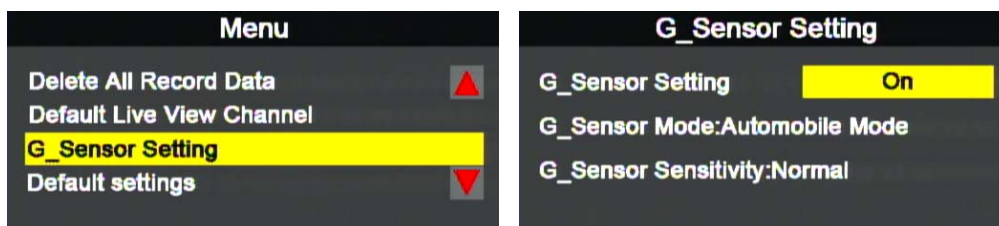
★**Caution! All data will be deleted when you select “Yes”.**






(6) Default Live View Channel Display






- Click  to enter the Live Screen Mode Setting after DVR booting completed.
- Using   to move to different selections (Multi-CH or CH1).
- Click  to save and confirm default display mode after boot-up.

(7) G sensor Setting

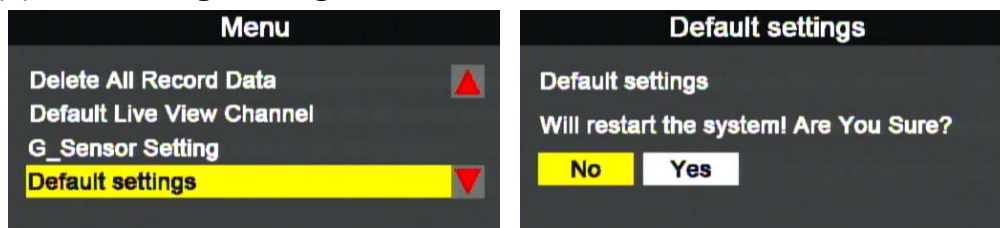






- Click  to enter G sensor Setting page..
- Click   key to move to the desired setting items.
- Click   key to change the setting °

- Click   to move to next setting. After finishing all setting, click  to confirm and save changing.

- G Sensor Setting : On \ OFF.
- G_Sensor Mode: Automobile , Truck and Motorcycle Mode.
- G_Sensor Sensitivity : lowest, lower ,low, normal, higher, highest.

(8) Defaulting Settings







- Click  to enter Default Setting page.
- Using   button to move to different selections (No or Yes), and Click  to confirm and execute it.

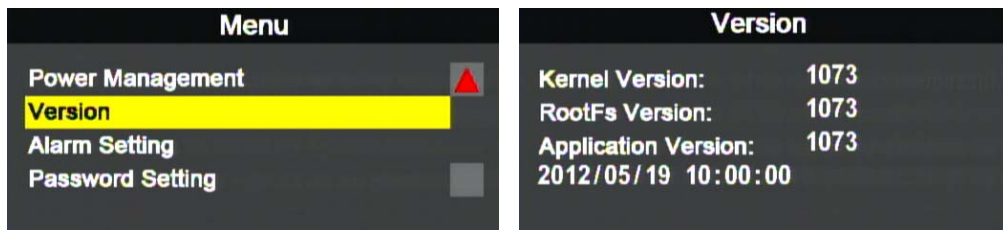
★ **Caution! When “Yes” is selected / confirmed, the machine would re-start again and clean the all the setting and back to factory default setting.**


(9) Power Management



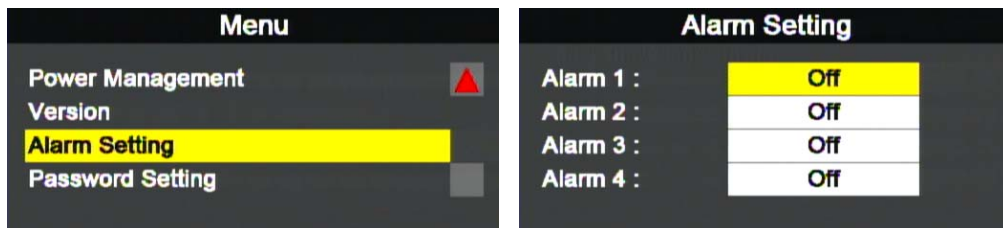
- Click the  to enter the Power Management Page to Setup Extended Record period after Engine shutdown.
- Using   button to change the extended record time (0, 30, 60, 90,120 minutes), then Click  to confirm/save the setting.









(10) Version



- Click  to check current firmware version.
★ Check if the firmware version is updated.




(11) Alarm Setting



- Click  button to enter Alarm setting page.
- Press   to move to different selection (Alarm 1~4).
- Press   to change the setting.
- After setting, press   for previous or next. When finishing all the setting, press  to confirm/save the changing.
- ★ When Alarm is triggered, it can be Off, or CH1, CH2, CH3 or CH4 pop-up to full screen.

(12) Password Setting

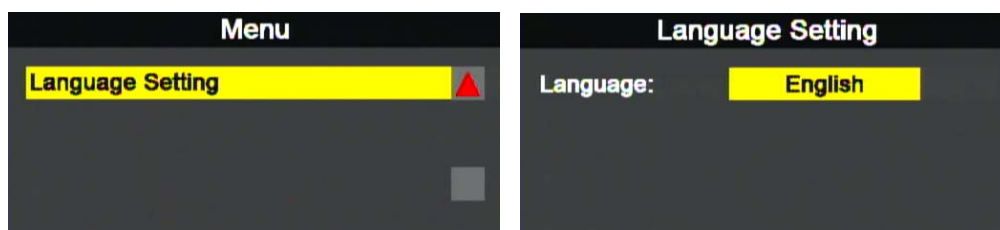


- Click the  button enter Password setting page.
- Click   button to select number for password, and click

◀ ▶ key to previous or next space for setting, after finished, click ◀ key to confirm. (You can select number 0~9 for the password. If you don't need the password function, please enter a blank and click "enter" key to confirm.

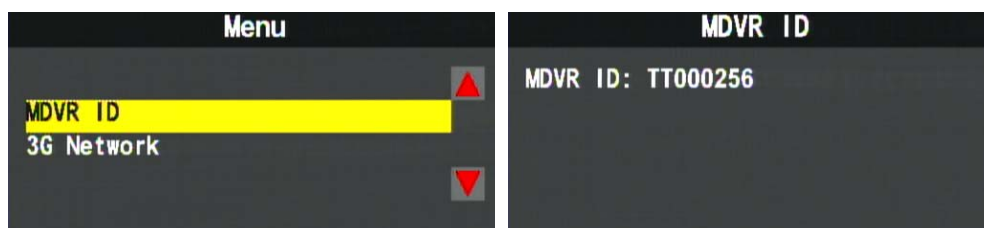
- ★ **When finished entering a password and move to next password location, the former one will show a " * " symbol in order to protect password information.**
- ★ **When finishing Password Setting, it will request password when enter main menu and playback page.**

(13) Language Setting



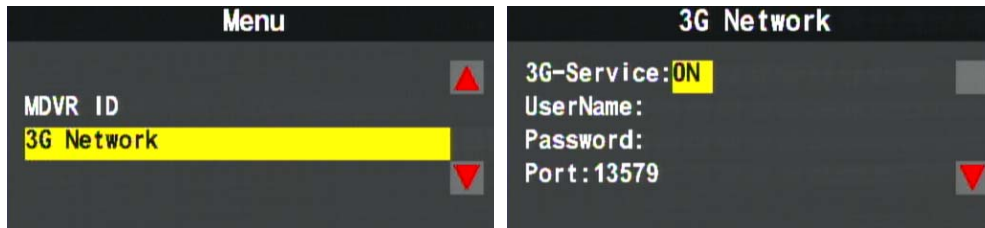
- Click ◀ button to enter Language setting page.
- Click ▶ ▶ to select language you need.
- After it finished, click ◀ key to confirm.
- ★ There are 7 languages: English, Traditional Chinese, Japanese, Korean, Russian, Spanish and German for NO 3G Model.







(14) MDVR ID (Only available for DVR with 3G network function)



- Click ◀ key to enter MDVR ID Page, to View unique ID.













(15) 3G Networking. (Only available for DVR with 3G Network function)



- Click  to enter 3G Network page.
- Press   to check related setting information(Server IP, APN, Dial up no)
- On 3G-Service, Click   to select on/off the 3G network function. Then Click  key to confirm/save the change.
- ★ **When select to off the 3G service, it will cause severe cannot receive the recording information, so please be especially aware of this when setting.**



3. LIVE Mode





- Click     to switch the related CH to full display mode; If you want to return to Quad mode, please press  key.
- On Live view mode, click  menu key to enter OSD menu or click  Play to enter playback mode.
 - ★  means on record.
 - ★  means GPS positioning successes.
 - ★  means microphone is on(Audi Record).
 - ★  means force record triggered by manual.
 - ★  means force record triggered by G-Sensor.










4. Playback on DVR.

Click the  to enter Playback mode.

Select Decode Items			
Start Record Time		End Record Time	
2012/05/29	15:27:21	2012/05/29	15:27:34
 2012/05/29	15:28:14	2012/05/29	15:31:28
 2012/05/29	15:31:44	2012/05/29	15:34:18
Page 00001		Total Pages 00001	

Select Decode Items: Click   to select the Record Event then click to confirm/start playback footage selected.





- (1) 1) Click     to switch the related CH to full display mode; If you want to return to Quad display, please press  key.
- (2) On Playback, Click  key to stop and exit the playback mode.
- (3) Press  key to pause video stream.
- (4) On  mode, click the  key to continue play recording file.

G. Playback on Carbox Player

1. Through Carbox Player on PC site

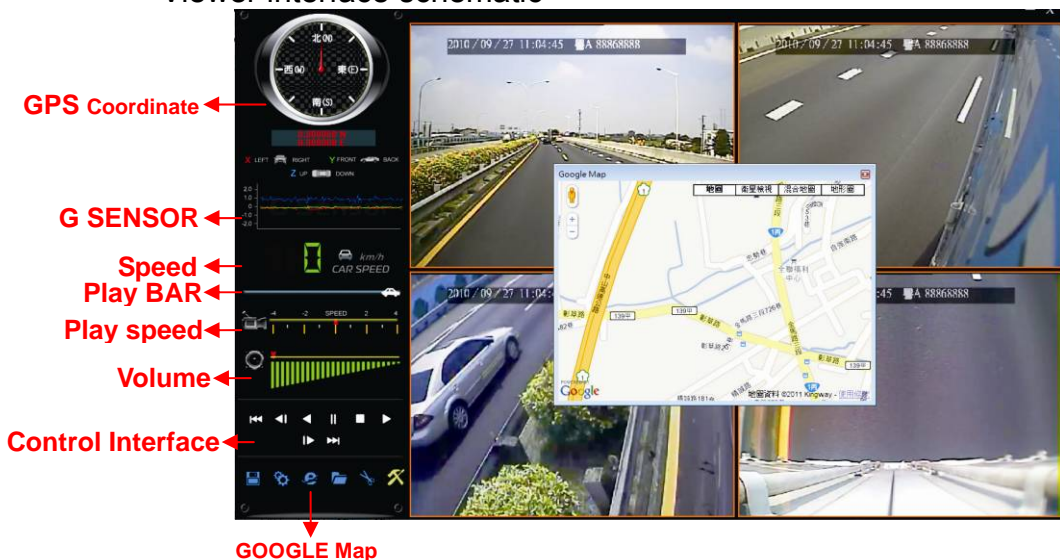
(1) Use SD card to playback directly

Execute the CarBox2.exe  from CD-ROM , the display as showing below. Click  to choose the backup files or select drive path of memory card or hard disk, and then double-click the file on event list you want to play.

★Caution: It needs to install DirectX 9.0 or above before running CarBox2 software.

Operating instruction



■ Viewer interface schematic















★GPS Coordinate, Speed and Google Map (when GPS receiver is plug and GPS positioning successfully)


a. Control interface description

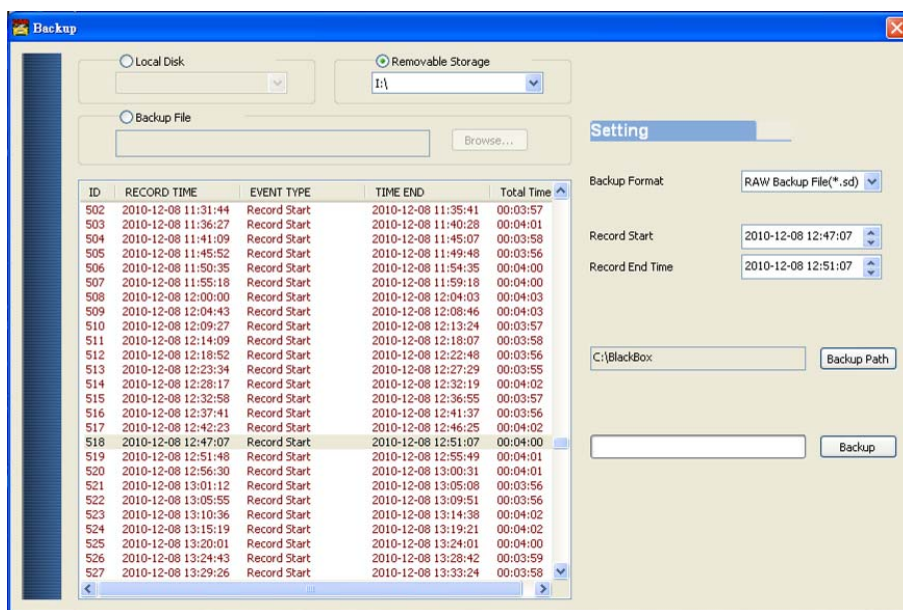


1		Previous File
2		Previous Frame

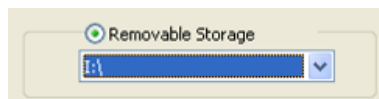
3		Backward Play
4		Pause
5		Stop
6		Play
7		Next Frame
8		Next file
9		Open folder, select file.
10		Disk backup. Select the backup path for file storage.
11		Google Map
12		Configuration
13		Snapshot
14		Tool, SD card format, language setting.

■ Backup

During Review footage through PC, Click” ”, then it will pop-up as following backup dialogue windows.



Step 1. Select the SD card drive no.



Step 2. Select the recorded file which you want to backup

ID	RECORD TIME	EVENT TYPE	TIME END	Total Time
1	2010-11-13 06:23:32	Record Start	2010-12-07 00:54:20	570:30:48
2	2010-12-07 00:55:04	Record Start	2010-12-07 00:57:54	00:02:50
3	2010-12-07 00:58:38	Record Start	2010-12-07 01:01:29	00:02:51
4	2010-12-07 01:02:14	Record Start	2010-12-07 01:05:05	00:02:51
5	2010-12-07 01:05:49	Record Start	2010-12-07 01:08:40	00:02:51
6	2010-12-07 01:09:24	Record Start	2010-12-07 01:12:15	00:02:51
7	2010-12-07 01:13:58	Record Start	2010-12-07 01:15:48	00:02:50

Step 3. Select the Backup Format


Backup Format: RAW Backup File(*.sd) ▼
 RAW Backup File(*.sd)
 AVI Backup File(*.avi)

Record Start: 2010-12-07 00:58:38 ▲▼

Record End Time: 2010-12-07 01:01:29 ▲▼

Backup format:

(1) RAW backup file. Specific .sd format

 2010-12-10-13-30-01.sd SD 檔案 20,224 KB	XXXX*.sd file
--	---------------

(2) AVI File(*.avi) backup when take this format as backup

 2010-12-10-13-30-10-CHN01.avi KMP - Windows Movie File 18,849 KB	CHN01 for front view camera image file, file type: *.avi
--	---

★caution : The difference between .sd format and .avi format is that AVI file contains only video and audio data but lose the GPS coordinates, speed and G-sensor data. so, we would recommend to select .sd format when you back the file.

Step 4. Backup Path: Select your backup destination (e.g.: C:\BlackBox)

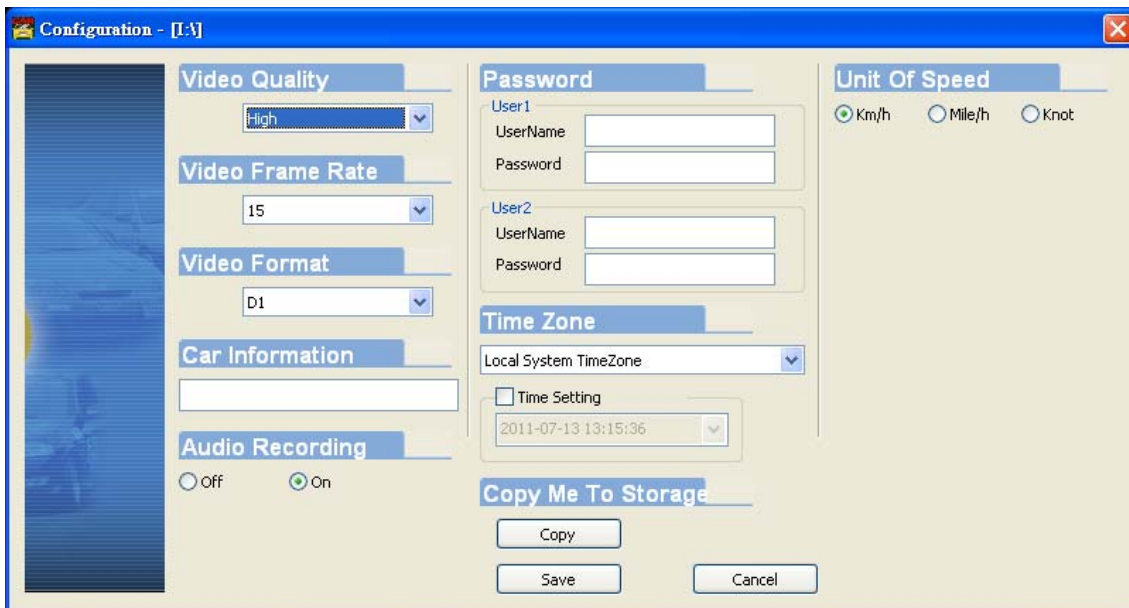
C:\BlackBox Backup Path

Step 5. Backup: Click 'backup' to start saving the file to your specified destination

Backup





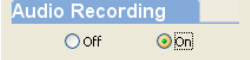
■ Configuration

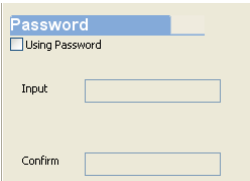

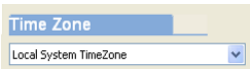
Before using the machine, please insert the SD card to card reader and connect to the PC to start setting. After setting, you can insert the card back to DVR and start recording.




The screenshot shows the 'Configuration - [I-V]' window with the following sections:

- Video Quality:** A dropdown menu currently set to 'High'.
- Video Frame Rate:** A dropdown menu currently set to '15'.
- Video Format:** A dropdown menu currently set to 'D1'.
- Car Information:** An empty text input field.
- Audio Recording:** Radio buttons for 'Off' and 'On' (selected).
- Password:** Fields for 'User1' (UserName, Password) and 'User2' (UserName, Password).
- Unit Of Speed:** Radio buttons for 'Km/h' (selected), 'Mile/h', and 'Knot'.
- Time Zone:** A dropdown menu set to 'Local System TimeZone' and a 'Time Setting' checkbox.
- Copy Me To Storage:** 'Copy', 'Save', and 'Cancel' buttons.

1	Video Quality		Select the video Quality: High/ Normal / Low
2	Video Frame		Set the recording frame rate for the camera (2, 4, 6, 8, 10, 15, 20, 25, 30)
3	Video Format		video signal format D1/CIF
4	Car Information		You can input the driver's name or license number here to identify people's identity. Suitable for company or group using.
5	Audio Recording		Audio recording on or off.

6	password		<p>This function can encrypt the data and prevent others from accessing. Maximum letters:15 letters. Example: 123456789123456</p> <p>After setting the password up, you have to input password every time for playing the files, modify the setting, formatting the memory card etc.</p> <p>★ Note : Please check if you have set capital letters for your password and save your password well in other place to prevent from missing.</p>
7	Speed unit		<p>You can set up the speed unit here.</p> <p>Km/h: kilometer per hour Mile/h: mile per hour Knot : knot per hour</p> <p>★ Note : 1 KM=0.6214 mile, 1 mile=1.6093KM, 1 Knot =1.853KM</p>
8	Time zone		<p>Time Zone: GMT (GPS auto time correction)</p>

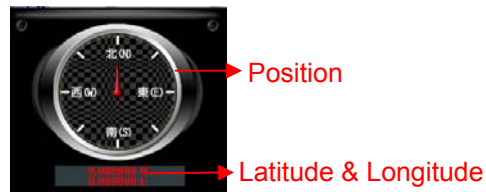
■ Snapshot

While playing the recorded file, you can use this function  to snapshot the picture and save it into your PC.

Default saving path for snapshot picture will be in
x:\IBoxPlayer/Snapshot folder. File type: .bmp

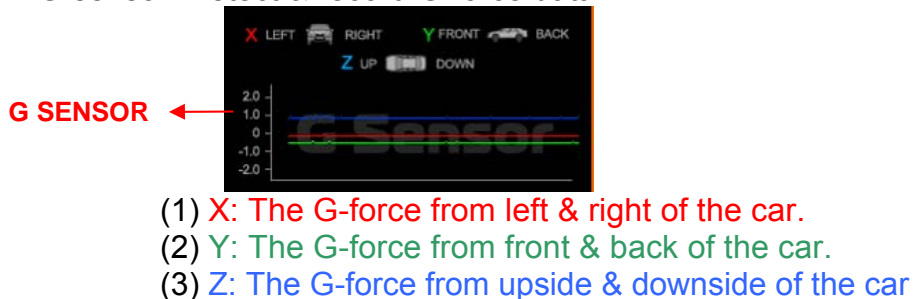


b. Latitude & Longitude Coordinates



c. G SENSOR

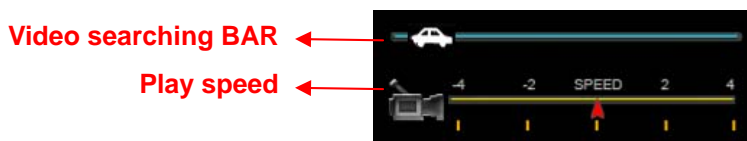
G-sensor: Detect & record G-force data.



d. Speed meter



e. Video Search & Play Speed





- (1) Video Searching : You can use the mouse to drag the bar to search the video quickly.
- (2) Play Speed : Support 2x, 4x fast forwarding and -2x, -4x slow play mode.

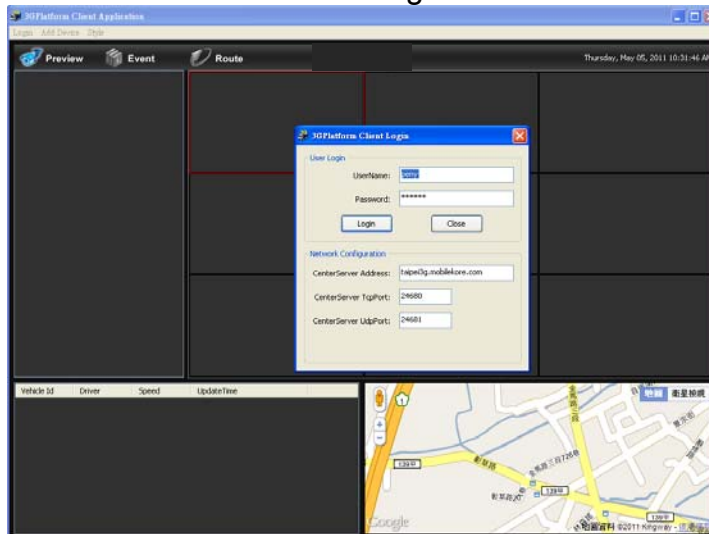
f. Volume control





Volume BAR : Click the left button of mouse control to adjust the volume degree.



(2) 3G client software for viewing directly(select models with 3G modules)

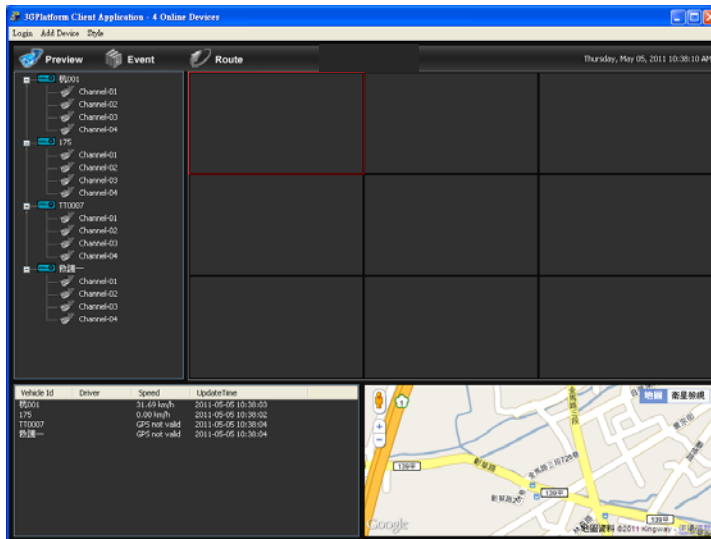
Executive Playback software “3G ClientApp.exe” , the playback screen shown as below. Enter the username and password and then press “” button to login screen.





★ Note: To perform this software will require DirectX 9.0 or more.

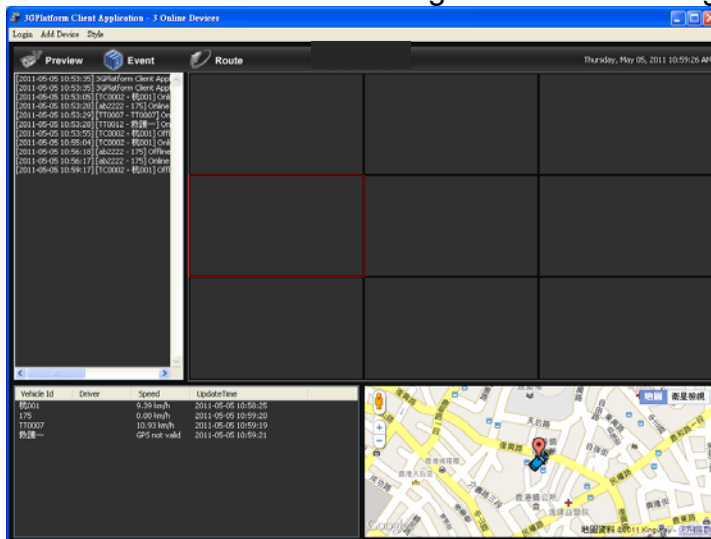
Click  and then select the name of vehicle to view the image(example, the figure of 175) Then click on Channel-01 (or other Channel) and then hold down the left mouse button and drag to the split screen in right side.


The other method to choose split-screen first and then click on Channel-01 with right key of the mouse, click PLAY function to view real-time image.(When the icon becomes  , it means the vehicle that is currently offline. Only the icon return to online status  to see the real-time image.)

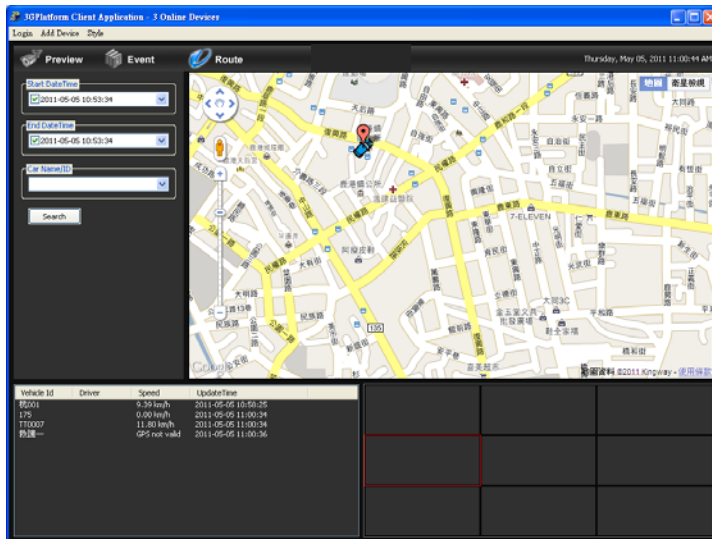


★ Note: When play real-time image, Channel icon will become green .

Click  Event can watch the event log and vehicle driving records...



Click  Route can watch the Google Map and inquiry the date and time record of the vehicle.....



■ 3GClientApp page and other relevant settings

Login Add Device Style



- (1) Login: click Login on the top of the screen to open the login screen information.
- (2) Add Device: In order to identify each device, add the vehicle information here.
- (3) Style: watch different split-screen, just click Style option to set values; Total 1 * 1, 2 * 2, 3 * 3, 4 * 4, 4 types of split screen to choose.

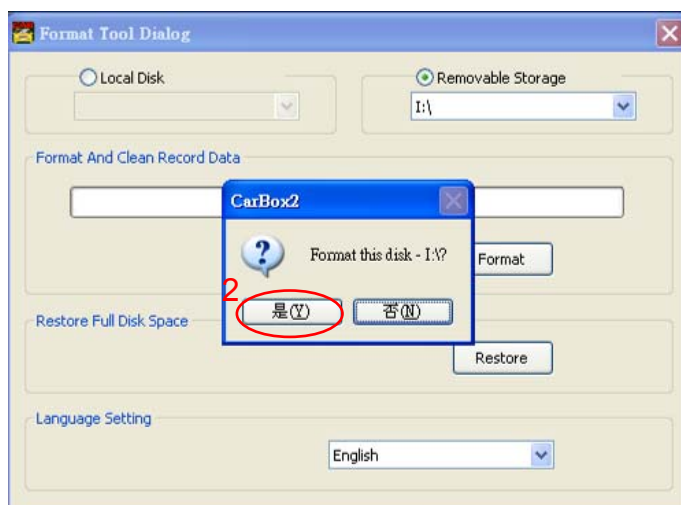
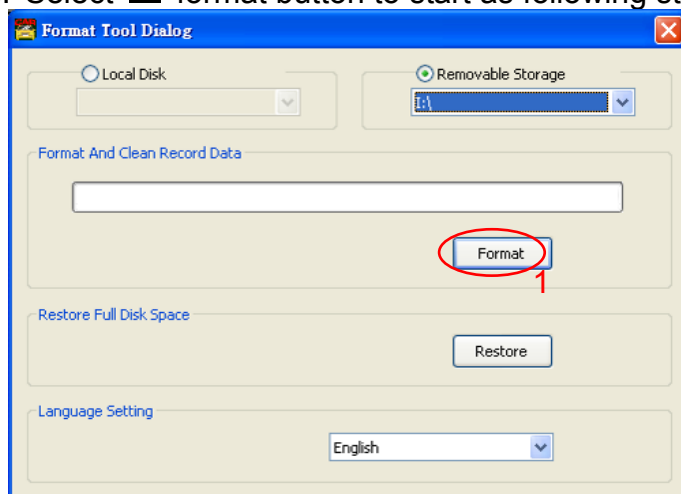
H. Format Memory Card

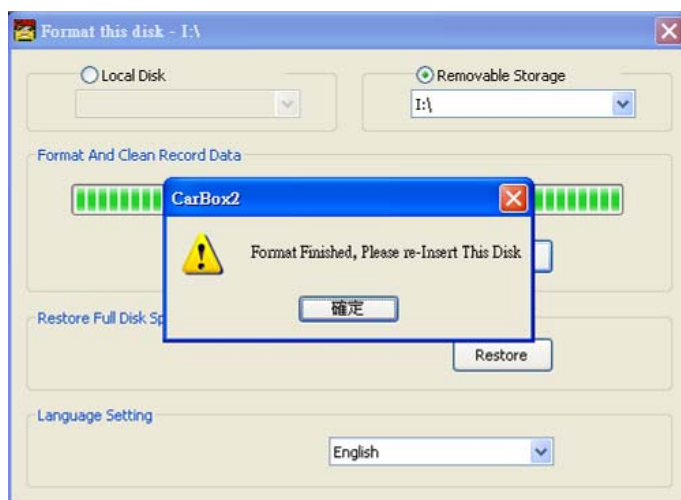
When should you 「format」 the SD CARD?

When the used SD card or just a new card, you should format SD card first before use. (the SD Card with delivery has been formatted and tested, you can just plug it in DVR).

■ Formatting procedure from PC site:

- (1). Execute the player “CarBox2.exe”  into main page(refer to the charts below)
- (2). Select  format button to start as following steps





- (3). After formatting completed, re-insert the SD card to do relative setting. please insert the card into DVR for recording.

■ Process to Format the SD Card on DVR:

1. Select "Delete All Record Data" of Menu to format SD card.



1. Select "Yes" and Click "Enter" to start formatting.





3. When the screen back to LIVE mode ,the formatting is completed.

I. Restoring Memory Card

When should you 「restore」 the SD CARD?

When you have backup the record files into PC and want to use the SD card for other purposes, you can restore the SD Card to normal format, so it can be used correctly.

How to 「restore」 SD card?

1. Put SD card into card reader
2. Put car reader into USB port on PC.
3. Execute the player “CarBox2.exe”  into main page(refer to the charts below )
4. Select restore button to start as following steps
(4.1) click 「restore」 button and it will pop-up the dialog window, click 「yes」 to start restoring.



(4.2) System will show up 「Restore this disk」 dialog window



(4.3) Check the quick format and click "Start" to format. After formatting is complete please click "OK", then "Close" dialog window.

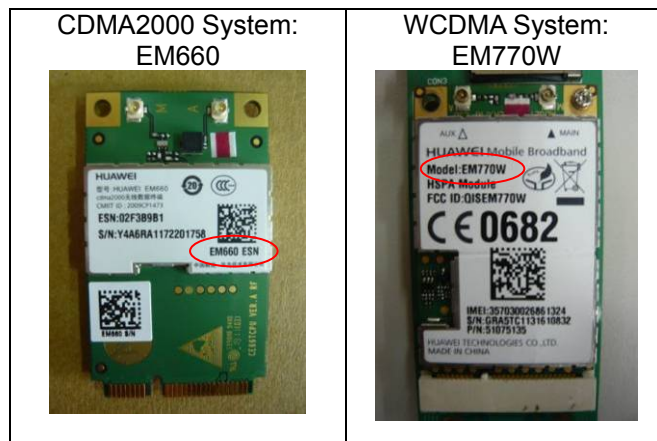


(4.4) Click "OK" to finish restore SD card, After finished, you can use the memory card for other purposes.



J. Installation & Set up for 3G module

Please confirm the 3G system with the telecom provider and select appropriate 3G module for local region usage.



1. 3G Module Installation

a. 3G Module Plug Position

Front Panel



Back Panel



1. Take apart screws (4pcs) from both front and back panels and remove the upper cover.



2. Install SIM card and 3G module on the positioning marked as red cycle.

b. Example for installation processes of HUAWEI EM770W

(The SIM card should be bought from local telecom service provider extra)

i. 3G module installation



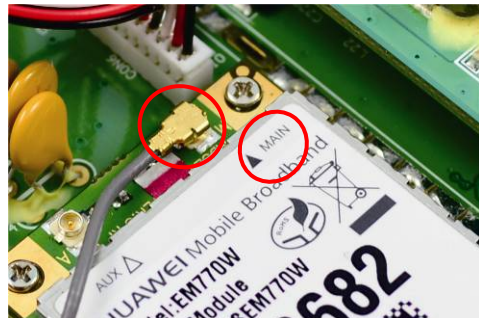
1. The 3G module is sloped to plug into slot of PCI-E



2. Flat press the 3G module on the mother board.



3. Two pieces of M2 screws Locked on the 3G module.



4. Connect the antenna plug at Main position as red cycle marked. Then Network module installation is completed.

- ii. **Disable PIN protect code on SIM card first then plug it to SIM slot** (PIN protect code can be disable by mobile phone)



1. Whirl the sliver button to right side to unlock the slot of SIM card on front panel



2. Shift the black cover to left side and plug SIM card flat into the slot.



3. Press the SIM card until it is fixed on the slot.

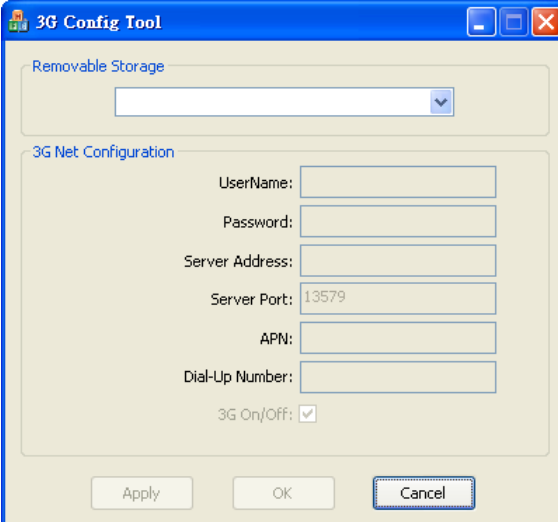


4. Shift the black cover to right side and whirl the sliver button to left direction to fix firmly.

2. 3G internet setting

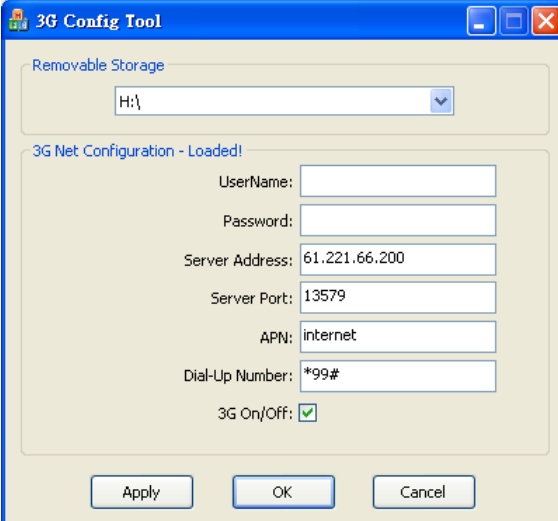
- Please confirm whether the code number is closed or not.
- Confirm if The Telecommunication providers' APN is the same with Dial-Up Number's information, if not, please follow all 3G Config Tool setting file steps.

- Please double click  and open the setting page as below:



The screenshot shows the '3G Config Tool' window. It has a title bar with standard Windows window controls. Below the title bar, there is a section for 'Removable Storage' with a dropdown menu. The main section is '3G Net Configuration', which contains several input fields: 'UserName:', 'Password:', 'Server Address:', 'Server Port:' (with the value '13579'), 'APN:', and 'Dial-Up Number:'. There is also a checkbox for '3G On/Off' which is checked. At the bottom, there are three buttons: 'Apply', 'OK', and 'Cancel'.

The explanation for setting up:

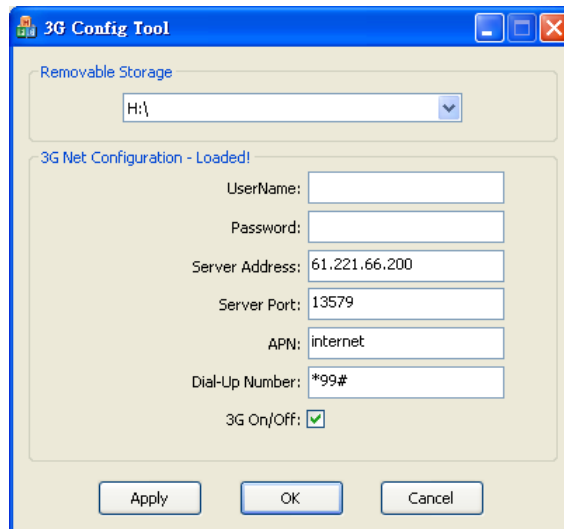


The screenshot shows the '3G Config Tool' window after loading default values. The 'Removable Storage' dropdown now shows 'H:\'. The '3G Net Configuration' section is titled '3G Net Configuration - Loaded!'. The input fields are now populated with default values: 'Server Address' is '61.221.66.200', 'Server Port' is '13579', 'APN' is 'internet', and 'Dial-Up Number' is '*99#'. The '3G On/Off' checkbox is still checked. The 'Apply', 'OK', and 'Cancel' buttons are at the bottom.

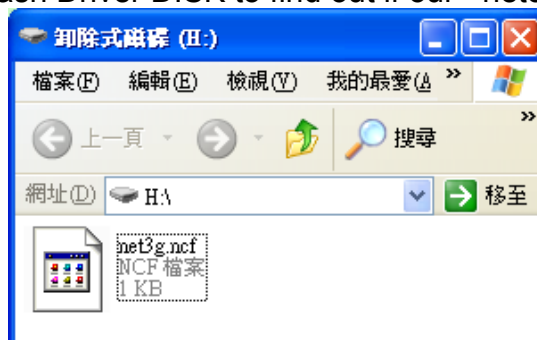
- UserName: No need in common
- Password: No need in common
- Server Address: Enter Server IP address setting----Default Server IP

Address is 61.221.66.200

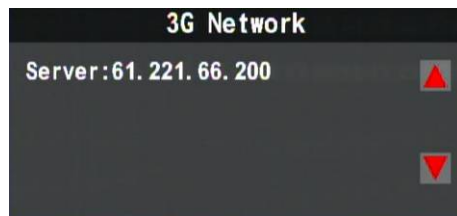
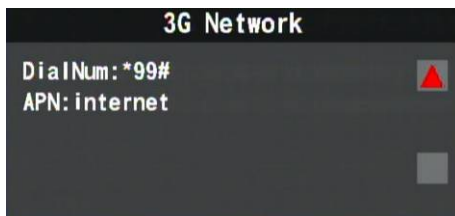
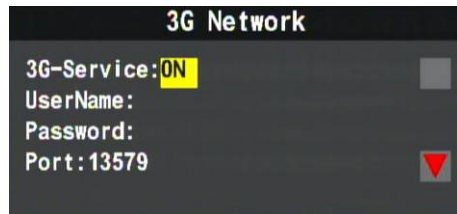
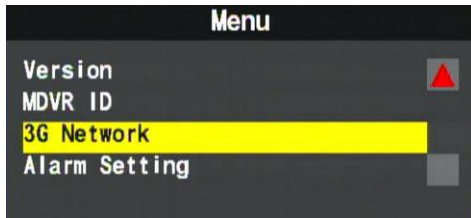
4. Server Port: Default Sever Port is 13579, Not recommend to change the original setting).
 5. APN: 3G APN, generally preset to be Taiwan Telecommunication providers, if in other area, Please check local Telecommunication providers offered APN setting name.)
 6. Dial-Up Number: 3G Dial-Up Number, generally preset to be *99#, if in other area, Please check local Telecommunication providers offered 3G Dial-Up SETTING Numbers.
 7. 3G On/Off: To choice whether star the 3G tele-connecting function or not. "Pick" (V) mean "Star" commonly, if not willing to use tele-connecting function , please directly neglect it.
- ii. Please put USB FLASH DRIVER into the PC's USB drive port, choice & click the proper disk storage. And input the following data as below:



- iii. After inputting, pick <o.k.> and process saving, the 3G Module information setting would be finished at this moment. Please check the USB Flash Driver DISK to find out if our <net3g.ncf>file existed .



- iv. And Please put your USB FLASH DRIVER into the SA-650-CF USB connecting Port, and re-connect the battery again.<After first {star}, if update information successfully, It would re-start again after 10 seconds.>
- v. After re-start, please pick the 3G internet item up in contents to confirm whether the 3G information updating successful or not.



When updating successfully, all the updating information would shown on the 3G module related web information.



When 3G connecting successfully, the right upper screen would show N signal.